

ONLINE AUCTION BID MANAGEMENT SYSTEM AND METHOD

BACKGROUND OF THE INVENTION

For conventional online auctions such as that by EBAY by ebay, Inc. of San Jose, California, each item can only be sold once to the highest bidder. When the bid is accepted, the auction is over.

Continuous auctions include those for bidding for Internet search engine key-phrases in order to achieve the highest possible rankings on a search engine. The search engine found at GOTO.COM by Goto.com, Inc. of Pasadena, California is an exemplary continuous auction. In this type of auction, the search engine lists web-page search results for a key-phrase search in the order of bid prices from advertisers. The advertiser with the highest bid for a given key-phrase appears first in the list, the next highest bidder appears second, etc. Since key-phrases are intangible, the same key-phrase can be sold to an unlimited number of users and the auction runs continuously with the rankings changing according to the current bids from advertisers.

As these and other types of continuous auctions become more common in many areas of commerce, it will become more difficult for bidders to monitor bids in several different auctions.

There exists a need for a system that monitors the current rankings in auctions and automatically adjusts its bids according to the rules defined by its user.

SUMMARY OF THE INVENTION

A method and system for automatically managing an auction for determining relative priority for a service in a system wherein priority is based on the relative value of related bids is disclosed. The method comprises checking for whether a first bid exceeds a second bid in an auction for determining continuing priority for providing an ongoing service for at least a first and second bidder, wherein the relative priority for providing the service for the first bidder is dependent on whether the value of the first bid exceeds the value of the second bid, and wherein the relative priority for providing the service for the second bidder is dependent on whether the value of the second bid exceeds the value of the first bid. The method further comprises incrementing the first bid to a value exceeding the second bid if the first bid does not exceed the second bid, thereby causing the relative priority for providing service for the first bidder to

1 exceed the priority for providing service for the second bidder. The steps of checking and
2 incrementing may be executed a plurality of times. The system may pause for a fixed period of
3 time between each series of steps of checking and incrementing.

4 The service provided to the bidders may comprise providing ranking of hypertext links to
5 web pages in search results in an on-line web page search engine, wherein ranking of a first
6 hypertext link to a first web page for the first bidder is higher than the ranking of a second
7 hypertext link to a second web page for the second bidder if the first bid is higher than the
8 second bid.

9 The method may comprise placing bids on a plurality of search terms which may be
10 typed into the search engine by search engine users wherein different ranking is determined for
11 each search term, wherein the ranking of the first hypertext link is higher than the second
12 hypertext link if the first bid is higher than the second bid for each of the plurality of search
13 terms. The steps of checking and incrementing are executed for a plurality of search engines for
14 the plurality of search terms.

15 A system for automatically managing the auction for determining relative priority for the
16 service in a system wherein priority is based on the relative value of related bids is further
17 disclosed. The system may comprise a processor electrically connected to a network, which is
18 electrically connected to the plurality of search engines. A database is electrically connected to
19 the system for storing and managing the bids.

20 A system and method for automatically managing an auction for determining relative
21 priority for vendors for selling to several buyers based on the relative value of related bid is
22 further disclosed. The system comprises a processor electrically connected to a network for
23 checking for whether a first bid is lower than a second bid in an auction for determining priority
24 on a server electrically connected to the network for ranking selling priority for a first and second
25 vendor, wherein the relative priority for selling by the first vendor is dependent on whether the
26 value of the first bid is lower than the value of the second bid, and wherein the relative priority
27 for selling by the second vendor is dependent on whether the value of the second bid is lower
28 than the value of the first bid. The processor is further for decrementing the first bid to a value

1 lower the second bid if the first bid is not lower than the second bid, thereby causing the relative
2 priority for the first vendor to exceed the priority for the second bidder.

BRIEF DESCRIPTION OF THE DRAWINGS

4 For a fuller understanding of the invention, reference is made to the following description
5 taken in connection with the accompanying drawings, in which:

6 Fig. 1 is a block diagram illustrating an exemplary system architecture for one embodiment
7 of the present invention;

8 Figs. 2-3 are flow diagrams illustrating a method performed by the system of Fig 1;

9 Fig. 4 is a block diagram illustrating an exemplary system architecture for another
10 embodiment of the present invention;

11 Fig. 5 is a flow diagram illustrating a method performed by the system of Fig 4;

12 Fig. 6 is a block diagram illustrating an exemplary system architecture for another
13 embodiment of the present invention;

14 Fig. 7 is a flow diagram illustrating a method performed by the system of Fig 6;

15 Fig. 8, is a block diagram illustrating an exemplary system architecture for another
16 embodiment of the present invention;

17 Fig. 9 is a flow diagram illustrating a method performed by the system of Fig 8;

18 Fig. 10, is a flow diagram illustrating the steps performed by a buyer server of the system
19 of Fig. 8;

20 Fig. 11, is a block diagram illustrating an exemplary system architecture for another
21 embodiment of the present invention; and

22 Fig. 12 is a flow diagram illustrating a method performed by the system of Fig 11.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

24 With reference to Fig. 1, a block diagram illustrating an exemplary system architecture for
25 one embodiment of the present invention is shown. The system comprises a server 100 comprising
26 an online bid management system 102 for automatically managing an auction for determining
27 relative priority for a service in a system wherein priority is based on the relative value of related
28 bids.

1 The bid management server 100 comprises a processor electrically connected to a
2 network. As those skilled in the art would recognize, the online bid management server 100 may
3 comprise a standard RISC or CISC processor running the NT operating system by the Microsoft
4 Corp. of Redmond, Washington, or a suitable UNIX server such as an ENTERPRISE Server by
5 Sun Microsystems of Palo Alto, California, or an AS400 System by the IBM Corporation, USA.

6 Bids are made from bidder terminals or computers 175 (called bidder terminals herein)
7 which may comprise Internet terminals with keyboards as one skilled in the art would recognize.
8 A User may enter a bid into the online bid management system 102 through a bidder terminal
9 175, which transmits the bid to the bid management server 100. As it receives bids from bidder
10 terminals 175, the online bid management system 102 prioritizes the bids periodically. The
11 online bid management system 102 determines continuing priority for providing an ongoing
12 service to the bidders.

13 The relative priorities for providing the service for bidders for their bids received from
14 the bidder terminals 175 are dependent on whether their bids exceed the value of other bids.

15 The server 100 may further comprise a database 104 comprising a relational database
16 management system (RDBMS) 104 for storing bids and data relating to the service provided to
17 the bidders. Bidders may further enter maximum and/or minimum bids into the bidder terminals
18 175. The online bid management system 102 keeps track of the maximum and minimum bids
19 for each user who enters bids into the bidder terminals 175 into RDBMS 104. The online bid
20 management system 102 will increment the lower bids until they reach desired bidding positions
21 entered by the bidders as long as the bids do not exceed maximum values entered by the
22 respective bidders. Thus, the online bid management system 102 causes the relative priority for
23 providing service to each bidder to exceed the priority for providing service with respect to other
24 bidders as long as the maximum bid is not exceeded, or until a desired position is reached. The
25 online bid management system 102 is further programmed to check and increment the bids a
26 plurality of times, pausing for a fixed period of time between each checking and incrementing.

27 For the embodiment of Fig. 1, the service provided to the users of bidder terminals 175
28 comprises providing ranking of hypertext links to web pages in search results in an online web

1 page search engine stored either on the online bid management server 100, or in one or more of
2 several search engines 150 stored on a plurality of servers, wherein the users bid on ranking
3 results for their web pages for terms typed into the one or more search engines 150. The search
4 engines rank hypertext links in search results presented after a search term is entered. The web
5 pages of bidders that bid higher than other bidders having web pages bidding for the same term
6 are ranked higher on the search results. The online bid management system 102 receives
7 maximum and minimum bids on a plurality of search terms that may be typed into the search
8 engine by search engine users wherein different rankings are determined for each search term for
9 each of a plurality of bidders.

10 One of the plurality of search engines 150a may be directly electrically connected to the
11 online bid management sever 100 to facilitate faster updating of ranking of hypertext links on the
12 search engine 150a. Similarly, a bidder terminal 175a may be directly electrically connected to
13 the online bid management server 100 so that bids may be updated faster to the online bid
14 management system 102.

15 As an alternative to having a centralized bid management system 102, the online bid
16 management system may be stored locally on one or more bidder terminals 175b. The bidder
17 terminal 175b comprises, or is electrically connected to, a RDBMS 104 which keeps track of bids
18 made on the bidder terminal 175b by one or several users. The system on the bidder terminal 175b
19 works in similar fashion to that on the online bid management server 100.

20 With reference to Fig. 2 a flow diagram illustrating a method performed by the online bid
21 management systems 102 of Fig 1 is shown. The method is for automatically managing the
22 auction for determining relative priority for a service in a system wherein priority is based on the
23 relative value of related bids. The system is programmed into a series of nested loops. The outer
24 loop, starting at step 200, comprises a timing mechanism which times the updating of bids for a
25 plurality of search engines 150. At step 202, the system loops through each subscribing bidder's
26 bids for bidders who have subscribed to the management system 102. At step 204, the system
27 loops through each search engine 150 for which the particular bidder has bid on terms for
28 ranking their web site.

1 Processing moves temporary to Fig. 3, where the system checks to see if the current
2 search engine in the loop supports a direct database interface, step 300. With respect to this step,
3 certain search engines may comply with the system, allowing the online bid management system
4 102 to directly access and update bid rankings on their search engine. If such is the case,
5 processing moves to step 302 which implements the direct querying and updating of the search
6 engine 150. Otherwise, processing moves to step 304 for which the online bid management
7 system 102 affects queries and updates to the search engine through the particular search
8 engine's web interface. After enabling access to the search engine 150, processing moves to step
9 206 in Fig. 2.

10 In step 206, the system loops through each term that the bidder has bid on in the current
11 search engine 150 of the loop established in step 204. The system checks for whether the
12 bidder's desired position is met for the particular web page and term, step 208. For example, the
13 system checks for whether the bidder's bid exceeds all other bids in the auction for determining
14 continuing priority for listing the bidder's web page. Another example allows the bidder to
15 choose a position, such as fourth in the results listing. If the system finds that the bidder has
16 achieved the proper position in the search engine with respect to the current term being
17 processed, the system may reduce the bid to a minimum which allows the bidder to keep the
18 position, step 210. Otherwise, the system increases the bid without exceeding the maximum bid
19 entered by the bidder, step 212.

20 The system re-checks the position held by the bidder, step 214. If the desired position is
21 not achieved, step 216, the system checks to see if the bidder had set a notification flag so that
22 the bidder would be notified if the desired position had not been achieved, step 218. If the bidder
23 had desired to be notified, the bidder is notified, step 220. Notification may be by a standard
24 technique such as e-mail.

25 The system checks to see if the last term for the current search engine has been checked,
26 step 222. If the last term has not been checked for the current search engine, then processing
27 moves back to step 206. Otherwise, the system checks to see if the last search engine has been
28 addressed for the current user, step 224. If not, then processing moves back to step 204.

1 Otherwise, the system checks to see the last of the bidder's positions have been checked, step
2 226. If not, then processing moves back to step 202. Otherwise, the bid management system
3 102 checks to see if the last bidder has been processed, step 226. If not, then processing moves
4 back to step 202. Otherwise, the system checks the timing loop, in this case a quarter day, for
5 whether it is time to process all of the bidders' positions again, steps 228-230. Once the timer
6 has determined that it is time to check the bidders' positions again, processing moves back to
7 step 200.

8 With reference to Fig. 4, a block diagram illustrating an exemplary system architecture for
9 another embodiment of the present invention for managing golf course tee-off time reservations is
10 shown. The system comprises a server 100 comprising an online bid management system 102 for
11 automatically managing an auction for determining relative priority for a service in a system
12 wherein priority is based on the relative value of related bids.

13 As with the server 100 of Fig. 1, the bid management server 100 comprises a processor
14 electrically connected to a network. As those skilled in the art would recognize, the online bid
15 management server 100 may comprise a standard RISC or CISC processor running the NT
16 operating system by the Microsoft Corp. of Redmond, Washington, or a suitable UNIX server
17 such as an ENTERPRISE Server by Sun Microsystems of Palo Alto, California, or an AS400
18 System by the IBM Corporation, USA.

19 Bids are made from bidder terminals 177 (called golfer reservation terminals in Fig. 4)
20 which may comprise Internet terminals with keyboards as one skilled in the art would recognize.
21 A user may enter a bid into the online bid management system 102 through a bidder terminal
22 177, which transmits the bid to the bid management server 100. As it receives bids from bidder
23 terminals 177, the online bid management system 102 prioritizes the bids periodically. The
24 online bid management system 102 determines continuing priority for providing an ongoing
25 service to the bidders.

26 The relative priorities for providing the service for bidders for their bids received from
27 the bidder terminals 177 are dependent on whether their bids exceed the value of other bids.

1 The server 100 may further comprise a database 104 comprising a relational database
2 management system (RDBMS) 104 for storing bids and data relating to the service provided to
3 the bidders. Bidders may further enter maximum and/or minimum bids into the bidder terminals
4 177. The online bid management system 102 keeps track of the maximum and minimum bids
5 for each user who enters bids into the bidder terminals 177 by storing the bids in RDBMS 104.
6 The online bid management system 102 increments the lower bids until they reach desired
7 bidding positions entered by the bidders as long as the bids do not exceed maximum values
8 entered by the respective bidders. Thus, the online bid management system 102 causes the
9 relative priority for providing service to each bidder to exceed the priority for providing service
10 with respect to other bidders as long as the maximum bid is not exceeded, or until a desired
11 position is reached. The online bid management system is further programmed to check and
12 increment the bids a plurality of times, pausing for a fixed period of time between each checking
13 and incrementing.

14 For the embodiment of Fig. 4, the service provided to the users of bidder terminals 177
15 comprises providing ranking of priority for golf course tee-off times on one or several golf
16 courses having golf club reservation servers 152. On their reservation servers 152, golf courses
17 may rank premium tee-off times based on what their members, or the public for public courses,
18 are willing to pay. For example, a premium tee-off time may be 9:00am Saturday morning. Bids
19 may be accepted for the 9:00am tee-off time, the highest bidder receiving the 9:00am time, with
20 other bidders bidding less than the highest bidder receiving tee-off times as close to the 9:00am
21 time as possible for each particular bid. The online bid management system 102 receives
22 maximum and minimum bids on a plurality of golf courses wherein tee-off times are determined
23 by bidding.

24 One of the plurality of reservation servers 152a may be directly, electrically, connected to
25 the online bid management sever 100 to facilitate faster updating of ranking of golf reservations
26 on the reservation server 152a. Similarly, a bidder terminal 177a may be directly electrically
27 connected to the online bid management server 100 so that bids may be updated faster to the
28 online bid management system 102.

1 As an alternative to having a centralized bid management system 102, the online bid
2 management system 102 may be stored locally on one or more bidder terminals 177b. The bidder
3 terminal 177b comprises, or is electrically connected to, an RDBMS 104 which keeps track of bids
4 made on the bidder terminal 177b by one or several golfers. The system on the bidder terminal
5 177b works in similar fashion to that on the online bid management server 100.

6 With reference to Fig. 5 a flow diagram illustrating a method performed by the online bid
7 management systems 102 of Fig 4 is shown. The method is for automatically managing the
8 auction for determining relative priority for a service in a system wherein priority is based on the
9 relative value of related bids. The system is programmed into a series of nested loops. The outer
10 loop, starting at step 500, comprises a timing mechanism which times the updating of bids for a
11 plurality of search engines 150. At step 502, the system loops through the bids for each golfer
12 who made bids for tee off times on one or more golf courses on the bid management system 102.
13 At step 504, the system loops through each bid for each golf club for the golfer.

14 The system checks for whether the golfer's desired position is met for tee-off time
15 priority on a particular course, step 506. For example, the system checks for whether the golfer's
16 bid exceeds all other bids in the auction for determining priority for a preferred tee-time.

17 Another example allows the bidder to choose a tee-time, such as 9:30am instead of the premium
18 time of 9:00am. If the system finds that the golfer has achieved the requested tee-time priority in
19 the search engine with respect to the current golf reservation server 152 processed, the system
20 may reduce the bid to a minimum which allows the bidder to keep the desired tee-time, step 510.
21 Otherwise, the system increases the bid without exceeding the maximum bid entered by the
22 golfer, step 512.

23 The system re-checks the position held by the golfer, step 514. If the desired position is
24 not achieved, step 516, the system checks to see if the golfer had set a notification flag so that the
25 golfer would be notified if the desired position had not been achieved, step 518. If the golfer had
26 desired to be notified, the golfer is notified, step 520. Notification may be by a standard
27 technique such as e-mail or voice telecommunication.

1 The system checks to see if the last golf club for the current golfer has been checked, step
2 522. If the last golf club has not been checked for the current golfer, then processing moves back
3 to step 504. Otherwise, the system checks to see the last golfer's positions have been checked,
4 step 526. If not, then processing moves back to step 502. Otherwise, the system checks the
5 timing loop, in this case a quarter day, for whether it is time to process all of the golfers'
6 positions again, steps 528-530. Once the timer has determined that it is time to check the
7 golfers' positions again, processing moves back to step 500.

8 With reference to Fig. 6, a block diagram illustrating an exemplary system architecture for
9 another embodiment of the present invention for managing frequent flyer reservations on airlines is
10 shown. As with the embodiments shown in Figs. 1 and 4, the system comprises a server 100
11 comprising an online bid management system 102 for automatically managing an auction for
12 determining relative priority for a service in a system wherein priority is based on the relative
13 value of related bids.

14 As with the server 100 of Figs. 1 and 4, the bid management server 100 comprises a
15 processor electrically connected to a network. As those skilled in the art would recognize, the
16 online bid management server 100 may comprise a standard RISC or CISC processor running the
17 NT operating system by the Microsoft Corp. of Redmond, Washington, or a suitable UNIX
18 server such as an ENTERPRISE Server by Sun Microsystems of Palo Alto, California, or an
19 AS400 System by the IBM Corporation, USA.

20 Bids are made from bidder terminals 179 (called frequent flyer reservation terminals in
21 Fig. 6) which may comprise Internet terminals with keyboards as one skilled in the art would
22 recognize. A frequent flyer member may enter a bid into the online bid management system 102
23 through a bidder terminal 179, which transmits the bid to the bid management server 100. As it
24 receives bids from bidder terminals 179, the online bid management system 102 prioritizes the
25 bids periodically. The online bid management system 102 determines continuing priority for
26 providing an ongoing service to the frequent flyers.

27 The relative priorities for providing the service for frequent flyers for their bids received
28 from the bidder terminals 179 are dependent on whether their bids exceed the value of other bids.

1 The bid management server 100 may further comprise a database 104 comprising a
2 relational database management system (RDBMS) 104 for storing bids and data relating to the
3 service provided to the frequent flyers. Frequent flyers may further enter maximum and/or
4 minimum bids into the bidder terminals 179. The online bid management system 102 keeps
5 track of the maximum and minimum bids for each frequent flyer who enters bids into the bidder
6 terminals 179 into RDBMS 104. The online bid management system 102 will increment the
7 lower bids until they reach desired bidding positions entered by the frequent flyers as long as the
8 bids do not exceed maximum values entered by the respective frequent flyers. Thus, the online
9 bid management system 102 causes the relative priority for providing service to each frequent
10 flyer to exceed the priority for providing service with respect to other frequent flyers as long as
11 the maximum bid is not exceeded, or until a desired position is reached. The online bid
12 management system is further programmed to check and increment the bids a plurality of times,
13 pausing for a fixed period of time between each checking and incrementing.

14 For the embodiment of Fig. 6, the service provided to the users of bidder terminals 179
15 comprises providing ranking of priority for airline reservations on one or several airlines having
16 airline reservation servers 154. On their reservation servers 154, airlines may rank premium
17 seats based on what their frequent flyer club members are willing to pay. For example, a
18 premium seat may be a seat in the first class section of a flight between Los Angeles and New
19 York, a highly traveled route. Bids may be accepted for the first class seats, the highest bidder
20 receiving the first choice in the first class lounge of the flight, with other bidders bidding less
21 than the highest bidder receiving subsequent choices for seating for each particular bid, all the
22 way down to the least desirable seat for the flight. Premium times on flight schedules may be
23 auctioned in similar manner. The online bid management system 102 receives maximum and
24 minimum bids on a plurality of airlines for which seating is determined by bidding.

25 One of the plurality of reservation servers 154a may be directly, electrically, connected to
26 the online bid management sever 100 to facilitate faster updating of ranking of flight reservations
27 on the reservation server 154a. Similarly, a bidder terminal 179a may be directly electrically

1 connected to the online bid management server 100 so that bids may be updated faster to the
2 online bid management system 102.

3 As an alternative to having a centralized bid management system 102, the online bid
4 management system 102 may be stored locally on one or more bidder terminals 179b. The bidder
5 terminal 179b comprises or is electrically connected to a RDBMS 104 which keeps track of bids
6 made on the bidder terminal 179b by one or several frequent flyers. The system on the bidder
7 terminal 179b works in similar fashion to that on the online bid management server 100.

8 With reference to Fig. 7, a flow diagram illustrating a method performed by the online
9 bid management systems 102 of Fig 6 is shown. The method is for automatically managing the
10 auction for determining relative priority for a service in a system wherein priority is based on the
11 relative value of related bids. The system is programmed into a series of nested loops. The outer-
12 loop, starting at step 700, comprises a timing mechanism or procedure which times the updating
13 of bids for a plurality frequent flyer servers 154. At step 702, the system loops through the bids
14 for each frequent flyer who made bids on the bid management system 102. At step 704, the
15 system loops through each bid for each airline for which bids are submitted by the particular
16 frequent flyer.

17 The system checks for whether the frequent flyer's desired position is met for
18 determining seating priority for a particular airline, step 706. For example, the system checks for
19 whether the frequent flyer's bid exceeds all other bids in the auction for determining priority for
20 preferred seating. Another example allows the bidder to choose a desired seat, such as first-class
21 front row, and the system can determine the cheapest position that can be taken for the frequent
22 flyer to be given that seat selection relative to the other frequent flyers. If the system finds that
23 the frequent flyer has achieved the desired seating priority with respect to the current frequent
24 flyer reservation server 154 processed, the system may reduce the bid to a minimum which
25 allows the frequent flyer to keep the desired seating priority, step 710. Otherwise, the system
26 increases the bid without exceeding the maximum bid entered by the frequent flyer, step 712.

27 The system re-checks the position held by the frequent flyer, step 714. If the desired
28 position is not achieved, step 716, the system checks to see if the frequent flyer had set a

1 notification flag so that the frequent flyer would be notified if the desired position had not been
2 achieved, step 718. If the frequent flyer had desired to be notified, the frequent flyer is notified,
3 step 720. Notification may be by a standard technique such as e-mail or voice
4 telecommunication.

5 The system checks to see if the last frequent flyer server 154 for the current frequent flyer
6 has been checked, step 722. If the last frequent flyer server 154 has not been checked for the
7 current frequent flyer, then processing moves back to step 704. Otherwise, the system checks to
8 see if the last frequent flyer's positions have been checked, step 726. If not, then processing
9 moves back to step 702. Otherwise, the system checks the timing loop, in this case a quarter day,
10 for whether it is time to process all of the frequent flyers' positions again, steps 728-730. Once
11 the timer has determined that it is time to check the frequent flyers' positions again, processing
12 moves back to step 700.

13 With reference to Fig. 8, a block diagram illustrating an exemplary system architecture for
14 another embodiment of the present invention for managing vendor-buyer sales is shown. As with
15 the embodiments shown in Figs. 1, 4 and 6, the system comprises a server 100 comprising an online
16 bid management system 102 for automatically managing an auction. In the case with the
17 embodiment of Fig. 8, the online bid management system 102 is for determining relative priority
18 for a bids for supplying goods or services to vendors.

19 As with the server 100 of Figs. 1, 4 and 6, the bid management server 100 comprises a
20 processor electrically connected to a network. As those skilled in the art would recognize, the
21 online bid management server 100 may comprise a standard RISC or CISC processor running the
22 NT operating system by the Microsoft Corp. of Redmond, Washington, or a suitable UNIX
23 server such as an ENTERPRISE Server by Sun Microsystems of Palo Alto, California, or an
24 AS400 System by the IBM Corporation, USA.

25 Bids are made from bidder terminals 181 (called vendor terminals in Fig. 8) which may
26 comprise Internet terminals with keyboards as one skilled in the art would recognize. A vendor
27 may enter a bid into the online bid management system 102 through a bidder terminal 181,
28 which transmits the bid to the bid management server 100. As it receives bids from bidder

1 terminals 181, the online bid management system 102 prioritizes the bids periodically. The
2 online bid management system 102 determines continuing priority for the vendors' relative
3 priority for selling goods and services to buyers.

4 The relative priorities for the vendors providing goods or services to the buyers are
5 dependent on whether the vendors' bids entered into the vendor terminals 181 are lower than
6 other vendors bids entered.

7 The bid management server 100 may further comprise a database 104 comprising a
8 relational database management system (RDBMS) 104 for storing bids and data relating to the
9 goods or services to be provided to the buyers. Vendors may further enter minimum and/or
10 maximum bids into the bidder terminals 181. The online bid management system 102 keeps
11 track of the minimum and maximum bids for each of the vendors who enter bids into the bidder
12 terminals 181 into RDBMS 104. The online bid management system 102 will start with the
13 maximum bid from each vendor and increment the higher bids until they reach desired bidding
14 positions entered by the vendors as long as the bids do not fall below the minimum values
15 entered by the respective vendors. Thus, the online bid management system 102 causes the
16 relative priority for a first vendor's selling of goods or services to a buyer to change with respect
17 to the priority for a second vendor's priority for selling of goods and services to the buyer by
18 lowering the first vendor's bid until the priority for first vendor exceeds the second vendor's
19 priority, or until a desired priority position for the first vendor is reached. The online bid
20 management system is further programmed to check and lower bids a plurality of times, pausing
21 for a fixed period of time between each checking and lowering of bids.

22 For the embodiment of Fig. 8, the service provided to the users of bidder terminals 181
23 comprises providing ranking of priority for selling to several buyers having buyer servers 156.
24 On their buyer servers 154, buyers may rank the order in which each buyer uses vendors who
25 desire to sell goods or serves to the buyers. For example, a buyer may need to purchase personal
26 computers from vendors in the amount of 100,000 units. Bids may be accepted for priority for
27 buying computers from selected vendors, the lowest bidding vendor having the opportunity to
28 provide as many computers as that vendor can supply, with other vendors bidding more than the

1 lowest bidder selling units until the full number of desired units have been purchased. The
2 system may comprise a method for selling and purchasing in lots or groups of units instead of
3 individual units for high volume sales. The online bid management system 102 receives
4 minimum and maximum bids from a plurality of vendors who desire to sell goods or services.

5 One of the plurality of buyer servers 154a may be directly, electrically, connected to the
6 online bid management sever 100 to facilitate faster updating of ranking of bids for purchasing
7 goods. Similarly, a vendor terminal 181a may be directly electrically connected to the online bid
8 management server 100 so that bids may be updated faster to the online bid management system
9 102.

10 As an alternative to having a centralized bid management system 102, the online bid
11 management system 102 may be stored locally on one or more vendor terminals 181b. The vendor
12 terminal 181b comprises, or is electrically connected to, a RDBMS 104 that keeps track of bids
13 made on the vendor terminal 181b by one or several vendors. The system on the vendor terminal
14 181b works in similar fashion to that on the online bid management server 100.

15 With reference to Fig. 9 a flow diagram illustrating a method performed by the online bid
16 management systems 102 of Fig 8 is shown. The method is for automatically managing the
17 auction for determining relative priority for vendors selling goods or services to buyers in a
18 system wherein sales are based on the relative value of related bids. The system is programmed
19 into a series of nested loops. The outer loop, starting at step 900, comprises a timing mechanism
20 which times the updating of bids for a plurality buyer servers 156. At step 902, the system loops
21 through the buyers for which bids for sales are made in the online bid management system 102.
22 At step 904, the system loops through each bid for each vendor who submitted bids for sales to
23 the buyers.

24 The system checks for whether the vendor's desired position is met for determining sales
25 priority for a particular buyer, step 906. For example, the system checks for whether the
26 vendor's bid is lower than all other bids in the auction for determining priority for selling
27 computers. Another example allows the vendor to choose a desired sales position, such as third
28 in line for sales priority, and the system can determine the maximum that the vendor's bid can be

1 to obtain the third priority position. If the system finds that the vendor has achieved the desired
2 selling position with respect to the buyer server 156 being processed, the system may increase
3 the bid to a maximum which allows the bidder to keep the desired sales priority, step 910.
4 Otherwise, the system decreases the bid without lowering the bid below the minimum bid
5 entered by the vendor, step 912.

6 The system re-checks the position held by the vendor, step 914. If the desired position is
7 not achieved, step 916, the system checks to see if the vendor had set a notification flag so that
8 the vendor would be notified if the desired position had not been achieved, step 918. If the
9 vendor had desired to be notified, the vendor is notified, step 920. Notification may be by a
10 standard technique such as e-mail.

11 The system checks to see if the last vendor the current buyer server 156 has been
12 checked, step 922. If the last vendor has not been checked for the current buyer server 156, then
13 processing moves back to step 904. Otherwise, the system checks to see the last buyer server
14 156 has been processed, step 924. If not, then processing moves back to step 902. Otherwise,
15 the system checks the timing loop, in this case each day, for whether it is time to process all of
16 the vendors' positions again, steps 928-930. Once the timer has determined that it is time to
17 check the vendors' positions again, processing moves back to step 900.

18 With reference to Fig. 10, a flow diagram illustrating the steps performed by a buyer
19 server 156 is shown. The buyer first places an order, step 1002. Placing an order may comprise
20 sending a broadcast message onto the world-wide-web 130 (Figs. 1, 4, 6 and 8), or by sending
21 mail to vendors, or e-mail to several vendors. If the order is performed by e-mail, then the
22 vendors may view the e-mail on their respective vendor terminals 181.

23 The buyer receives the current bids placed by the vendors, step 1004. Step 1004 may
24 comprise retrieving the bids from the RDBMS 104, or retrieving bids received on a regular bases
25 from one or more online bid management systems 102.

26 The buyer server 156 accesses the vendor bid record having the highest priority, step
27 1008. The buyer server 156 executes a program loop to purchase all needed products or services,
28 step 1010. The buyer server 156 attempts to order as many products as possible from the current

1 vendor, step 1012, which is the vendor with the highest priority on the first run through the loop.
2 The system checks to see if the buyer's order has been completely filled, step 1014. If the whole
3 order could not be filled with the current vendor, the buyer server 156 accesses the next vendor
4 record having the next highest priority, and processing moves back to step 1010. Otherwise, if
5 the whole order was able to be filled with the current vendor, then processing of the order ends,
6 step 1016.

7 Another embodiment of the present invention is one related to e-commerce or online
8 stores. This embodiment allows vendors to bid for positions within a category of an online store.
9 In previous systems, a user accesses an e-commerce web site such as BUY.COM and searches
10 for "modems." In typical e-commerce web sites, also called online stores, the results listings that
11 the user views after submitting the search comprises hundreds of modems from dozens of
12 different vendors. Typically, the list is arranged in either alphabetical order or according to
13 price.

14 With the system of the present invention, vendors can bid for their individual products to
15 be listed at the top of the search results (on a product-by-product basis), in the same way as
16 bidders bid for positions in the embodiment of Figs. 1-3. The vendor's inventory system is
17 connected to the bid management system 102. As inventory levels rise for a particular product,
18 the inventory system feeds that data into the bid management system 102, which automatically
19 increases bids for that product in an attempt to unload excess inventory. As inventory levels fall,
20 the opposite process occurs. Bids are reduced to avoid over-promoting a product that has low
21 inventory levels. Essentially, this embodiment is sophisticated version of the bid adjustment rules
22 described with respect to Figs. 1-3. Rather than simply setting minimum and maximum bids, the
23 bids, and possibly the minimum and maximum bids, are dynamically adjusted according to
24 current inventory levels on each product.

25 With reference to Fig. 11, a block diagram illustrating an exemplary system architecture for
26 the presently described embodiment for managing vendor-online store listing priority is shown. As
27 with the embodiments shown in Figs. 1, 4, 6 and 8, the system comprises a server 100 comprising
28 an online bid management system 102 for automatically managing an auction. In the case with

1 the embodiment of Fig. 11, the online bid management system 102 is for determining relative
2 priority for bids for listing products in online stores for vendors.

3 As with the server 100 of Figs. 1, 4, 6 and 8, the bid management server 100 comprises a
4 processor electrically connected to a network. As those skilled in the art would recognize, the
5 online bid management server 100 may comprise a standard RISC or CISC processor running the
6 NT operating system by the Microsoft Corp. of Redmond, Washington, or a suitable UNIX
7 server such as an ENTERPRISE Server by Sun Microsystems of Palo Alto, California, or an
8 AS400 System by the IBM Corporation, USA.

9 Product inventories are entered into vendor terminals 183 which may comprise Internet
10 terminals with keyboards as one skilled in the art would recognize. A vendor enters product
11 inventories for its products listed in online stores 158 into the online bid management system 102
12 through a vendor terminal 183, which transmits the product inventory data to the bid
13 management server 100. As it receives product inventories from the vendor terminals 183, the
14 online bid management system 102 checks product inventories periodically. Based on the
15 inventory data, the online bid management system 102 determines proper bids for maintaining
16 listing priority for the vendor's products in the online stores 158.

17 The relative priority for listing each of a vendor's products in online stores is dependent
18 on whether the inventory for each product is higher with respect the vendor's other products.

19 The bid management server 100 may further comprise a database 104 comprising a
20 relational database management system (RDBMS) 104 for storing bids for the product listings
21 and corresponding data relating to inventory data for the corresponding products. Vendors may
22 further enter minimum and/or maximum bids into the bidder terminals 183. The inventory data
23 is stored and updated periodically, e.g. monthly, for each product each vendor is selling in each
24 online store. For each vendor, the online bid management system 102 measures relative
25 inventories for each of the vendor's products. For those products which have higher relative
26 inventories, the bid management system 102 increments the bids higher to reach higher listing
27 positions as long as the bids do not exceed the maximum values entered by the respective
28 vendor. Thus, the online bid management system 102 causes the relative priority for listing the

1 high inventory products to increase until a higher sales cause the inventory to drop with respect
2 to the vendor's other products. As inventory lowers for a product, then the bids for the product
3 are steadily decreased to lower the product's listing orders in the online stores. The online bid
4 management system is further programmed to check inventories a plurality of times, pausing for
5 a fixed period of time between each checking of inventories.

6 One of the plurality of online stores 158a may be directly, electrically, connected to the
7 online bid management sever 100 to facilitate faster updating of ranking of bids for listing
8 products. Similarly, a vendor terminal 183a may be directly electrically connected to the online
9 bid management server 100 so inventories may be updated faster to the online bid management
10 system 102.

11 As an alternative to having a centralized bid management system 102, the online bid
12 management system 102 may be stored locally on one or more vendor terminals 183b. The vendor
13 terminal 183b comprises, or is electrically connected to, a RDBMS 104 which keeps track of
14 inventories for one or several vendors. The system on the vendor terminal 183b works in similar
15 fashion to that on the online bid management server 100.

16 With reference to Fig. 12 a flow diagram illustrating a method performed by the online
17 bid management systems 102 of Fig 11 is shown. The method is for automatically managing an
18 auction for determining relative priority for listing products in a system wherein listing order is
19 based on the relative value of related bids. The system is programmed into a series of nested
20 loops. The outer loop, starting at step 1200, comprises a timing mechanism which times the
21 updating of bids for a plurality online stores 158. At step 1202, the system loops through the
22 vendors having products tracked in the online bid management system 102. At step 1204, the
23 system loops through each product for the current vendor.

24 The system checks for whether the product has a high inventory with respect to the other
25 vendor's products, step 1208. If the product is found to have a high inventory, then the
26 processing moves to step 1208 where the system sets a loop to adjust bids in each online store for
27 the product. The bid is increased to give the product a higher listing priority, step 1210 without
28 exceeding the maximum bid. Alternatively, the system may adjust the maximum bid for listing

1 the product in the online store in step 1210. The bid management system 102 checks for whether
2 the last online store has been processed for the product, step 1212. If the last online store has not
3 been processed, then processing moves back to step 1208.

4 If the product was found to not have a high inventory in step 1206 relative to other
5 products, then the system sets a loop through each online store listing the product, step 1214.
6 For each online store, the bid is lowered for the product in order to lower the priority of listing
7 for the product, step 1216. The bid management system 102 checks for whether the last online
8 store has been processed for the product, step 1218. If the last online store has not been
9 processed, then processing moves back to step 1214.

10 The bid management system 102 checks for whether the last product for the current
11 vendor has been processed, step 1220. If not, then processing moves back to step 1204.
12 Otherwise, the system checks for whether the last vendor has been processed, step 1222. If not,
13 then processing moves back to step 1202. Otherwise, the system checks the timing loop, in this
14 case each month, for whether it is time to process all of the vendors' product inventors again,
15 steps 1224-1226. Once the timer has determined that it is time to check the vendors' inventories
16 again, processing moves back to step 1200.

17 It will thus be seen that the objects set forth above, among those made apparent from the
18 preceding description, are provided and, since changes may be made in carrying out the above
19 system and method and in the construction set forth without departing from the spirit and scope of
20 the invention, it is intended that any and all matter contained in the above description and shown in
21 the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.